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Central Intelligence Agency

FIVE YEAR

AUTOMATIC DATA PROCESSING...1969 - 1973

PLAN



July, 1968

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CIA FIVE YEAR ADP PLAN

FY 1969 - FY 1973

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I. PLAN

S E C R E T

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A. INTRODUCTION

The Central Intelligence Agency has successfully managed and analyzed mounting volumes of intelligence data by increasing both its resources and capacity for automatic data processing. ^{1/} Projections through 1973 clearly point to continued ADP growth.

The Agency's ADP needs, historically, have been handled on a project by project basis. Recently the integrated nature of the effort has required that it be given more visibility especially in its total impact on Agency resources and its changing role in intelligence methodology and analysis.

The first step to this end required identification of ADP resources in the Agency. This has been accomplished and regular reports are provided to the Bureau of the Budget in response to BOB circulars. The second step involved preparing an ADP plan setting forth the assumptions for planning, the uses made of ADP, the objectives and planned programs for ADP application, and projected costs. The paper also serves to highlight the Agency's responsiveness to the President's directive of June 28, 1966 and identify selected areas that need further management attention.

The President's directive states in part:

"I want the head of every Federal Agency to explore and apply all possible means to

^{1/} Note: The projections contained in this paper reflect substantive projections of requirements for the FY 1970-73 period as of May 1968. O/PPB has also used past experience in projecting future cost trends. We believe the resource projections and computational requirements are reasonably valid and realistic in terms of our ability to expand in dollars, personnel, equipment, and space for these activities.

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- Use the electronic computer to do a better job;
- Manage computer activity at the lowest possible cost.

I want my administration to give priority emphasis to both of these objectives--nothing less will suffice.

The electronic computer is having a greater impact on what the Government does and how it does it than any other product of modern technology.

Clearly, we must devote our best efforts to managing this large investment wisely and with the least cost."

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B. PRINCIPAL FINDINGS

Agency tasks in collection, image processing, communication, analysis of foreign missile and space events, and programming for overhead reconnaissance are absolutely dependent upon ADP growth for their accomplishments.

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ADP expenditures over the past five years have increased at [] in

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1968 and a projected growth to [] by 1973. Computational capability has increased in the same period from the equivalent of one 360/65 to seven 360/65 and the next five years point to further increasing this capability to an equivalent of twenty 360/65. Personnel devoted to the ADP activity has increased about 15 percent per year and at the present time requires [] man years and is projected by 1973 to over []

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The Agency's ADP resource is a principal means for meeting the future demands of technical intelligence collection, processing and production and for economically performing administrative and support tasks wherein management information and control are a predominant factor to success.

The ADP activity in CIA is inherently complex, both organizationally and technically. Planned ADP projects will involve several different offices, directorates or other agencies. Coordination and direction at the top of the Agency through the programming process is essential if risk and waste are to be minimized.

Present and future ADP systems will present heavy demands for recruitment, training, and retraining of personnel (including users).

Planned ADP systems for the most part require long lead time and careful attention to project management and technical detail. The present ground rules for project management in an integral sense need to be sharpened and developed. In this context, there has been a tendency in the Agency to set aside, overlook and underestimate future ADP and information requirements. Planning in the information processing field must be done across the Agency and with the greatest of care as a matter of some urgency.

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Rate of growth in dollars, personnel and computer capacity are reflected in Figure 1 on the preceding page. The increasing costs of ADP are NOT an equivalent increase in costs to the Agency. In some cases ADP activity represents a shift of resources from manual to computer methods or a relative cost reduction. Without the extensive use of ADP, total Agency costs for performing essential functions would be considerably greater, and results would be less effective.

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C. ADP PLANNING ASSUMPTIONS

On the basis of current trends, estimated future requirements and planned developments, the following observations, projections and conclusions about future Agency ADP (FY 1969-1973) can reasonably be made.

1. The President, Congress and the Bureau of the Budget will continue to press for wider application, greater efficiency, and economy in the utilization of ADP resources and for demonstration of improvements and accomplishments in ADP management. The trend toward development of large-scale and complex intra- and inter-Agency systems will continue and accelerate. There will be increased emphasis on managing, planning, and reporting ADP activity.

2. The ADP state-of-the-art capabilities available in 1969-1973 will permit significant improvements in the effectiveness of intelligence collection, dissemination, retrieval, processing, and production. It will permit economies in many administrative tasks, and it will make possible major improvements in management information and control methods. The availability of these improved capabilities will result in strong pressures to utilize them. Some of the Agency's difficult problems in information processing will be eased by the use of ADP systems, but operation of the new system will itself create difficult new technical and managerial problems.

3. The Agency's and Community's future success in performing its mission and the extent of its competitive advantage over hostile intelligence services will be increasingly influenced by our effectiveness in exploiting advanced ADP techniques, in collection and counterintelligence activity as well as intelligence production.

4. During the period 1969-1973 total Agency ADP costs and manpower will increase about 11 percent annually. These increases will result both from greater utilization of ADP for new tasks and from substitution of ADP for less efficient manual processes. Partially compensatory reductions in cost and manpower of non-ADP activities will be expected.

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D. ADP OBJECTIVES

1. Qualitative ^{1/}

- a. Cost-effectiveness
- b. Timeliness
- c. Completeness and accuracy
- d. Economy

2. Substantive

- a. Use of computers to efficiently provide the higher speed and larger volume required by the CIA communications network.
(Message Automatic Exchange (MAX))
(Cable Secretariat/Signal Center Automation)
- b. Computer based document control and biographic intelligence processing needed for clandestine operations
(Records Integration Division-Central Retrieval System)
- c. Analysis of missile and space activity by the use of ADP methods.
(Foreign Missile Space Analysis Center (FMSAC) systems)
- d. Computer assisted collection and processing of ELINT data
(Office of ELINT Systems)
- e. Development of a Community On-Line Intelligence System to facilitate the exchange of information within the intelligence community.
(Community On-Line Intelligence System (COINS))

^{1/} For most of the Agency's ADP applications, the major idea is better information processing with optimum cost-effectiveness. In some cases this does result in an important net dollar savings, but more frequently it provides vital improvements and essential capabilities, at an increased cost.

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- f. ADP capabilities to improve the efficiency of imagery exploitation and provide Integrated Information System for the National Photographic Interpretation Center.
- g. Central ADP services to provide essential ADP for which dedicated or special systems are not suitable.
(Office of Computer Services (OCS) Systems)
- h. ADP required for overhead reconnaissance systems
- i. Improved central document and information storage and retrieval systems, including both generalized and specialized files, with on-line remote query stations.
(Central Reference Services (CRS) project)
- j. Computer driven plotter and graphic display facilities to improve map production and analysis.
(Office of Basic and Geographic Intelligence (OBGI) project)
- k. Automated dissemination of information received in machine-readable form.
(Central Reference Services (CRS) project)
- l. Research and development of new ADP techniques for application to intelligence collection, processing and production problems.
(Office of Research and Development (ORD) and Information Processing Research and Development (IPRD) Lab)
- m. Processing System)
- n. An ADP system to provide more effective and integrated processing for all support functions.
- o. Development of a Program Budgeting Information System using ADP.
(Program Budgeting Information System (PBIS) in study stage)
- p. Development of a system to display the allocation of intelligence resources by geo-political target areas and subject matter.
(Target Oriented Display (TOD))

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3. Major ADP Projects by Priority ^{1/}

a. Top Priority (Essential)

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- (1) Major OCS Systems (plus included in items below)
- (2) OSA and OSP Systems
- (3) NPIC ADP and Integrated Information System (IIS)
- (4) Message Automatic Exchange (MAX)
- (5) CRS information storage and retrieval, generalized and specialized files
- (6) RID Central Retrieval System
- (7) FMSAC Systems
- (8) Signal Center Automation
- (9) Support Information Processing System (SIPS)
- (10) OEL ELINT processing system
- (11) Security Automated Name Check (SANCA)

b. Moderate Priority (Valuable)

- (1) OCS Time Sharing System
- (2) OEL ELINT collection systems
- (3) CRS document storage and retrieval
- (4) Target Oriented Display (TOD)
- (5) OSI intelligence processing
- (6) OBGI plotting and graphic system
- (7) OSPSD automated printing (EPIC)
- (8) Community On-Line Intelligence System (COINS)
- (9) ORD and IPRD laboratory ADP research and development projects

^{1/} ADP project priorities are primarily a reflection of the estimated need, benefits, value, feasibility and urgency of a project, relative to its cost. ADP projects have been grouped in three classes of priority:

- a. Top priority - Highest ratio of benefit to cost, and essential to the Agency's mission.
- b. Moderate priority - Moderate ratio of benefit to cost, and valuable to the Agency's mission.
- c. Marginal priority - Marginal ratio of benefit to cost, and useful to the Agency's mission.

c. Marginal Priority (Useful)

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- (1) Automated dissemination of information received in machine-readable form
- (2) Program Budgeting Information System (PBIS)
- (3) processing system
- (4) Cable Secretariat Automation

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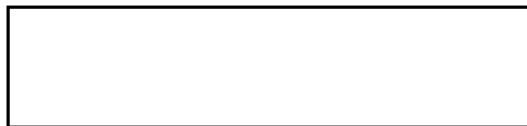
E. PROJECTIONS FOR THE FUTURE . . . FY 1969 - 1973

Estimated Resource Requirements

A comprehensive picture of Agency ADP resource requirements for the period 1964 to 1973 is shown in Figures 2 and 3.

For FY 1968 ADP expenditures represent:

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For FY 1973 ADP expenditures are expected to increase to:

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ADP projections and estimates for the five year period are accurate within a range of plus or minus 10%. Sources of error include:

Uncertain knowledge of the rate of technological advance.

Impossibility of anticipating all future contingencies and requirements.

A tendency to omit potential projects (for 1971 and beyond) which are uncertain in magnitude or eventual implementation.

Inherent limitations in precise mid-range estimating.

Technical complexities and risks inherent in major ADP projects.

Deficiencies for the accommodation of ADP in planning in the current program structure.

The net result of these limitations has been a tendency to underestimate future ADP resource requirements and overestimate planned rates of accomplishment. Marked and widespread improvements in Agency ADP planning and project management have been noted in the past year and the recommendations of this plan should extend that progress.

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Major ADP Systems

A partial list of expansions and new developments in major ADP systems planned for 1969-1973 includes the following:

25X1A	NPIC Integrated Information System (IIS) Cost: <input type="text"/> man years
25X1A	DD/S Support Information System (SIPS) Cost: <input type="text"/> man years
25X1A	RID Central Retrieval System Cost: <input type="text"/> man years
25X1A	OC Automated Communications Cost: <input type="text"/> man years
25X1A	OCS Central ADP Services Cost: <input type="text"/> man years
25X1A	ORD ADP Research Development and Engineering Cost: <input type="text"/> years
25X1A	CRS Information Storage and Retrieval Cost: <input type="text"/>

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F. ALTERNATIVES FOR THE FUTURE

1. Kinds of Alternatives

The Agency's alternatives for future ADP activities and developments involve three major factors, subject to management control:

WHAT we do
(selection of objectives to be implemented)

HOW we do it
(cost-effective project implementation)

LEVEL of activity to be performed
(the optimum level of resource and capability
for each project, neither "over-kill" nor
"under-kill")

An optimized Agency ADP program combines the optimum WHAT, HOW and LEVEL for individual objectives and projects. It incorporates only those projects which are justified by their contribution to Agency tasks at specified resource and capability levels. Major alternatives within such a program are the projects to be included, the resource levels at which the projects will operate, and the efficiency with which they are operated.

2. Constraints

Future Agency ADP activity is constrained by several factors over which management has only limited influence. These include:

The magnitude of total Agency resources;

Feasibility limitations of ADP state-of-the-art;

Mandatory requirement for certain ADP activity;

Critical dependence on ADP for many Agency tasks.

3. Alternative ADP Program Packages

Projections of future ADP resource requirements and three alternative programs for 1969-1973 are shown in Figure 4, page 18. These represent different funding levels for selected ADP projects, and different combinations of projects. Annual costs for the three alternative programs are shown in Figure 5.

The "full" program includes top, moderate, and marginal priority projects, funded at levels for full development and operation. It is, however, a highly selective list rather than a list of everything which is operationally feasible.

The "optimum" package is more selective and constrained. It provides little flexibility, eliminates one marginal project and reduces the capability and resource level of other projects. It represents an approach to an optimum cost-effectiveness package. It is based on identified requirements and planned projects, and is consistent with the projections of cost trends in Agency ADP.

The "austerity" package is drastically limited by budgetary constraints. It represents a minimum essential program with serious sacrifices of important capabilities. It is not a very cost-effective package because it limits some projects to less than optimum levels and because it would cause a shift of some costs to other means, both more expensive and less effective. Because of these limitations, it is hardly a feasible alternative, except under extreme budgetary constraint.

There is an infinite variety of other alternatives which could be formed from different combinations of projects and resource levels. The three alternatives presented are meaningful packages which cover a resource variation of plus or minus about [] over the five year period.

The "optimum" program is the recommended package. It includes the important ADP tasks at cost-effective levels. The "full" program provides more flexibility than current budgetary restraints permit, and the "austerity" package sacrifices too much essential capability.

The above alternatives consider mainly WHAT tasks should be accomplished and the appropriate resource and capability

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LEVELS. Of equal importance is HOW they should be performed, the cost-effectiveness and methods of development and operation of individual projects. Improvements in the efficiency and economy of performing ADP tasks may represent the greatest area of opportunity for improving the Agency's total ADP program. This is a complex problem with no simple or easy solutions, and it is mainly dependent upon the amount and quality of management attention which ADP receives.

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G. RECOMMENDATIONS

1. Discussion

The Agency's ADP activities are large-scale and growing. The Agency's future success in performing its mission will be increasingly dependent upon capabilities which only ADP can provide. These are commanding reasons for expending the efforts necessary to improve the Agency's use and management of ADP.

Although we have much cause for pride in our ADP accomplishments, opportunities for improvement will only be revealed by a critical search for limitations, problems and difficulties. It is our shortcomings, more than our successes, which provide opportunities and warrant attention.

In ADP, the selection of goals and objectives is usually excellent and relatively simple, but the achievement of those objectives is neither simple nor certain. The cost of anything less than optimum project implementation is both the loss of resources and loss of a needed capability.

Achievements and progress toward improving the economy and effectiveness of Agency ADP are notable, positive and increasing. This progress can be furthered by the following measures:

Greater attention to ADP by senior management.

More exacting management decisions on new ADP projects, and periodic progress reviews of continuing projects.

Greater internal illumination of Agency ADP activity.

Increased use of systematic methods for project management including competitive procurements and fixed price contracts.

Accomplishment of these improvements in ADP implementation is the proper function of an explicit Agency ADP program and a major recommendation of this plan.

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2. Specific Recommendations

The following recommendations are submitted for approval:

- a. That the resource levels and project priorities of the "optimum" five-year ADP program be approved for planning purposes, subject to annual review in the planning, programming and budget cycle.
(Figures 4 and 5, pages 18 and 19)
- b. That an explicit and detailed Agency ADP program be developed, compatible with the Agency Combined Program Call Structure, by the Director of Planning, Programming, and Budgeting.
- c. That an Agency ADP Policies and Procedures Manual be prepared by O/PPB for approval by the Executive Director-Comptroller, to include:

Agency management and policies for ADP

Planning, programming, budgeting and reporting
procedures for ADP

ADP project approval and progress review procedures

Systematic procedures for ADP project development
and implementation

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S E C R E T

II. MAJOR AGENCY ADP ACTIVITIES

A. PROGRAM CATEGORY ANALYSIS

The ADP resources of CIA support every major program in which the Agency is engaged. OCS resources are used for major contributions to five program categories and 12 sub-categories. In FY 1968, of the

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[redacted] residual for OCS were ultimately used by program categories other than Central ADP Services. In Figure G, OCS and RID ADP resources have been re-allocated to the program categories which they ultimately support in order to show the end utilization of Agency ADP resources. (Appendix B is a detailed tabulation of ADP resource utilization by program category and office.)

For FY 1968 the ultimate use of ADP resources by program category is as follows:

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The Information Processing and Exploitation category represents [redacted] The largest part of this was ADP for Imagery Exploitation (NPIC) which costs [redacted] of total ADP funds.

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The Collection category was the next largest user of ADP resources, utilizing [redacted] of total ADP dollars. Overhead Reconnaissance accounted for [redacted] of this and Clandestine Collection for [redacted].

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The Program Wide category accounts for [redacted] of ADP cost. The largest portion of this is [redacted] million for seven elements of Support Services. Communications accounts for another [redacted] in ADP use. The Agency use of ADP systems in Communications is an excellent example of the achievement of greater economy and increased effectiveness through use of ADP. [redacted] is Clandestine Operations Support.

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Less than [redacted] of Agency ADP resources is utilized to support Executive Direction and Control. This is an extraordinarily small effort to assist the level of Agency management, where the potential pay-off may be greatest. Expansion of the information system to support Agency-wide activity is planning, programming, and budgeting for top management warrants our attention and is currently receiving consideration.

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The Research, Development, and Engineering category uses [] of Agency ADP resources including [] for ORD and [] for OCS. Not included in these totals are additional ADP research costs for NPIC and other offices. Most of these costs represent research in ADP methods, but a small part of the cost is ADP applied to research in other fields. An expenditure of more than [] Agency ADP funds on RD&E is high but may be more than warranted if it reduces the friction and the waste involved in rapid accommodation to new technology.

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As a whole, the Agency's 1968 ADP activity cost [] of the Agency budget). However, within this total activity there is considerable variation in the benefits and pay-off derived from individual ADP projects and applications. In many cases the requirements, benefits and efficiencies are real and apparent. In some cases the requirements are vague, the benefits marginal, and the justification doubtful. Improvements in the use of ADP resources can be achieved only by a closer scrutiny of individual projects and applications on a case-by-case basis, and this is the goal of the recommended ADP program, and enhanced management procedures.

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B. PLANNED ADP BY DIRECTORATE, OFFICE AND MAJOR PROJECTS

This section describes the ADP operations and development planned for the period FY 1969-1973. For each Directorate, the requirements, objectives, major ADP projects, their current status, planned development and resource requirements are presented.

The magnitude of planned ADP activity is indicated by Figures 7 through 10 which show the dollars and personnel needed to accomplish the plans of each Directorate and the future trend of these resource requirements.



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The ADP plans of the individual Directorates follow.

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Intelligence Directorate

The ADP objective of the Intelligence Directorate is to extend the productive capacity of available resources by the use of demonstrably cost-effective ADP applications. Specific objectives include:

To provide improved central document and information storage and retrieval systems, including both generalized and specialized files, with remote query stations.

To improve the efficiency of imagery exploitation.

To provide automated dissemination of information reaching the Agency in machine-readable form.

To provide a computer-driven plotter to expedite map production and graphic display facilities to support analysis.

These objectives correspond to the current and future ADP requirements of the Intelligence Directorate including a number of small tasks of varying significance and two very large collective requirements of major importance:

The imagery exploitation requirement for NPIC to meet the commitments of the National Tasking Plan at minimum cost and to provide precise dimensional intelligence, of improved quality and timeliness, and greater volume is feasible only with automatic data processing.

The requirements for CRS to provide improved and economical systems for storage and retrieval of information and documents. (ADP dependent)

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The cost of the total DD/I ADP effort for the period 1969-1973 is projected at man years. Use of ADP resources by Intelligence Directorate and Offices for FY 1968 are shown in Figure 11, following.

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The DD/I ADP plan accomplishes the above objectives and requirements by means of a large number of small computational and information storage and retrieval applications and three major projects.

The NPIC Integrated Information System (IIS), encompasses the major NPIC ADP activity. This project includes operating systems, photogrammetric support information and document storage and retrieval, and report generation. It provides the ADP support essential to imagery exploitation. This IIS will permit NPIC to process the very large volume of imagery scheduled for collection during the planning period. Phase II of the project, system design, has recently been completed. Portions of the IIS are scheduled to be operational by the end of FY 1969, 1970 and 1971. The entire IIS capability should be operational by 1973. Cost, 1969-1973 is

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CRS's information storage and retrieval system has been modified. The new system employs a shallow index, places primary emphasis upon output (vice detailed input), and has been reorganized on a regional-functional basis. The trend will be to gradually place more emphasis on the development of some specialized intelligence files. Generalized computer programs being prepared by OCS will support a more complex CRS system(if required) as well as a variety of Agency information storage and retrieval activities supported by OCS. Cost, 1969-1973 is

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CRS's document storage and retrieval system will be automated in order to satisfy demands for greater speed and efficiency and to provide a capability to handle an increasing volume of work. The automatic system will employ magnetic storage of documents (photo image on tape, discs, etc.) and output at remote scanning and printing terminals. Cost, 1969-1973 is

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Support Directorate

The major ADP objective of the Support Directorate is to provide a more effective, comprehensive and integrated use of ADP in satisfying the information processing requirements for all Support functions. Studies performed in 1964 revealed that the existing information processing methods were neither efficient nor did they adequately satisfy requirements. Each separate system was designed unto itself with little communication to related systems and a needless redundancy of files and processing. The computers processing these files were also obsolete, and their replacement required reprogramming of existing applications.

DD/S requirements can be most efficiently met by an integrated system encompassing the information processing of all Support functional areas. The Support Information Processing System (SIPS) is being developed to accomplish this objective. It will replace existing separate information systems as it becomes operational. Full operational capability will be achieved in FY 1970 or later.

25X1A The development cost of SIPS for the period 1969 to 1973 is estimated at approximately [] of resources provided by OCS and the remainder by DD/S. Personnel requirements for 1969 to 1973 total []. OCS will provide [] and DD/S the remainder.

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25X9 The need for the renovation is clear. Deferral of SIPS means doing the same tasks less effectively and less economically. The alternatives are in the rate of development and the efficiency with which the project is performed. The current schedule seeks an optimum match of deliberate speed and orderly progress.

A second major ADP objective of the Support Directorate is the selective improvement of the CIA communications network to meet the higher-speed and larger-volume requirements of the next ten years. The volume of Agency electronic communications is expected to double in the next 5 to 7 years. The use of computers and ADP techniques in automated communications systems is the most economic means of providing the increased capacity required. The alternative of utilizing increased manpower would be considerably more expensive, less reliable, and produce slower communications.

Use of ADP resources for the Support Directorate are shown in Figure 11.

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The use of ADP to augment communications systems will cost approximately [] for the period FY 1969-1973 (exclusive of SIPS communications, costed under SIPS) and will require an average of [] per year for maintenance and operation of automation equipment.

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Four major projects subsume the major ADP requirements of the Support Directorate:

Support Information Processing System (SIPS), an integrated ADP system to satisfy the accounting, reporting, and record keeping requirements of all the functions and offices of the Support Directorate. The system will provide improved accountability for people, money and materiel. It is presently in design and coordination phase. Implementation of final sub-system is projected for 1970 or 1971.

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Message Automatic Exchange Program (MAX) is an on-line computer-controlled, real-time message handling system for major relay points. It improves speed, reliability, efficiency, and capacity of the network and permits control and limitation of manpower requirements. MAX I became operational at [] in 1965. MAX II and MAX III are scheduled for Headquarters and [] in June 1968 and January 1969. Ultimately, systems are planned at seven locations, with a useful life of 8-10 years. Cost, 1969 to 1973 is []

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Cable Secretariat/Signal Center Automation is to be provided by a computer assisted system for message processing, reproduction and distribution. It will expedite message delivery, reduce personnel and reduce copy requirements. Initial increments will begin operation in FY 1970 and system completion in FY 1974. Cost, 1969 to 1973 is [] for signal center and [] for Cable Secretariat.

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Security Automated Name Check Activity (SANCA) provides computer indexing and retrieval of active and retired personnel security dossiers. The system includes approximately [] 3,000 daily searches, and 600 new entries each day. An on-line direct access capability has recently been added via remote terminals. The total project cost 1969-1973 is estimated at []

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Plans Directorate

The allocation and utilization by Plans Directorate of ADP resources for FY 1968 is shown in Figure 13.

The major ADP objective of the Plans Directorate is to provide the optimum document control and biographic intelligence processing systems needed for clandestine operations. These systems will support the counterintelligence functions of Headquarters' components, field stations, other U.S. Agencies and foreign intelligence and security services. This objective contemplates a data base of 7 1/2 million index records, over one million documents of 3.5 million pages, and performance of 1,000 document retrievals [] plus major additional processing.

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A second objective is the development and operation of a computer system for processing []. Collection of data is projected to exceed existing processing capacity by the end of FY 1969. By 1971 the volume of data is expected to double and a larger scale processing facility must be planned.

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The DD/P ADP plan will accomplish these objectives and requirements by means of the following major projects:

The RID Central Retrieval System includes a

[] subsystem. The first two subsystems are operational and the third will be operational during FY 1972. Operational support is enhanced by program applications for specific requirements. During the period 1969-1970 these systems will be further developed by conversion to IBM 360/50 computers, reprogramming as needed, mechanization of the RID Main Index, improved direct support to field stations, and provision of essential additional micro-image storage to supplement the existing Walnut capacity. RID expenditures on this project will total approximately [] for the period FY 1969-1973.

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The [] processing system is in the developmental and limited production stage. Its purpose is to perform the ADP processing necessary to produce useful intelligence from raw [] data. The current status consists of a small capacity

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production computer in [] a similar computer used for development at the contractor facility, and contractor developed software. System study during 1968 will serve as the basis for the larger ADP system to be installed during FY 1970 to process the larger volume of data then collected. The costs of this project will total [] for the period 1969-1973.

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The resources for performing these ADP tasks are DD/P resources, with a small contribution from OCS.

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Directorate of Science and Technology

The broad ADP objective of the Directorate of Science and Technology is to make the optimum utilization of ADP techniques in the implementation of scientific and technical projects for which the Agency is responsible. ADP is utilized to attain one or more of the following potential benefits:

Accomplish tasks not otherwise possible
Improve quality, accuracy or timeliness
Reduce resource cost in dollars or manpower

Specific ADP objectives are to provide the system capabilities to accommodate the following requirements:

Convert analog electronic signal data to digital form, process and analyze this data in order to produce electronic intelligence.

Automate ELINT collection activities in the field.

Research and develop new equipment, techniques and procedures for application to intelligence collection, processing and production problems.

Analyze Soviet Bloc and Chicom weapons systems to determine their capabilities.

Analyze collection of scientific data to determine the status of scientific and technological development in specific fields for Soviet Bloc, Chicom and other target areas.

Support collection programs (OSA and OSP)

Analyze missile and space activity in Soviet Bloc, Chicom, and other target areas.

Provide central ADP services on an Agency-wide basis.

For the period 1969-1973 the total DD/S&T ADP costs, 25X1A
including services for other Directorates will approximate

Allocation and utilization of ADP resources in the Directorate of Science and Technology for FY 1968 are shown in Figure 14, following.

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The DD/S&T ADP plan will accomplish these objectives and requirements by means of the following major projects and activities:

The OCS central ADP facility is the largest ADP resource in the Agency. For 1968 it represents

[redacted] Agency ADP personnel. Its function is to provide ADP services for all users in the Agency requiring such facilities. This centralization of a part of the Agency's ADP facilities and skills provides more effective and economical use of equipment and skills where individual components have diverse and limited computer applications which cannot fully employ systems dedicated to their exclusive use. To discharge this function, OCS has developed the operating systems needed to process scientific data, administrative (support) data and intelligence information.

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The ADP facilities of OCS are an essential step in performing Agency tasks rather than an end in themselves. Although OCS resources are allocated under the program sub-category of central ADP services, these resources are used to support every major Agency activity. See Figures 8 and 15 through 18.

The BOB decision to provide [redacted] for OCS equipment purchases in FY 1968 resulted in larger than normal hardware costs for the year. Although this will reduce future costs, it is likely that expanding requirements, new applications, major software revisions, and planned additional personnel will require OCS expenditures of about [redacted] for the period 1969-1973, including services for other Directorates.

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Major OCS system projects include:

Completion of transition of third generation computers.

Major participation in development of SIPS, CRS systems and COINS

Development of improved computer operating systems

New Applications

The allocation and utilization of OCS resources by Directorate for 1968 were approximately as follows:

	<u>\$'s</u>	<u>%</u>	<u>Man years</u>	<u>%</u>
25X1A DCI, Staff				
25X1A DDS				
DDI				
DDS&T				
DDP				

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25X1A

The [] from BOB plus [] of Agency funds for larger than normal hardware purchases in FY 1968 has the effect of making the above costs appear temporarily larger than they otherwise would be.

Other major DDS&T projects are as follows:

ADP Control of ELINT Collection is a project to improve effectiveness and reduce manpower requirements for field ELINT collection systems. Currently, a small PDP-8 computer is used. Design studies have been completed for a system to improve collection effectiveness, and an [] implementation contract is being negotiated. For 1969 to 1973 costs will approximate [].

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ELINT Analysis and Processing is dependent upon computer assistance for identification of new ELINT signals and the processing of large volumes of

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[REDACTED]
purpose. The volume and characteristics of ELINT data make its effective processing impractical without computers. This project handles the processing of [REDACTED] collection systems. Total costs 1969-1973 will be [REDACTED] man years.

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ADP Research and Development (ORD) is aimed at producing better ADP methods, equipment or techniques for clandestine collection, technical penetration, imagery exploitation, information processing, technical surveillance and counter measures. In the period FY 1969-1973 expenditures of [REDACTED] man years are projected.

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Information Processing R&D Facility (ORD) provides ADP research support to ORD and the Agency as a whole. The facility consists of four computers and associated equipment. For FY 1969-1973 cost will total [REDACTED] man years (additional to the preceding item).

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ADP Support of OSA, processes information essential to mission success for OSA programs. Cost for FY 1969-1973 is [REDACTED] man years (mainly for system communications).

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ADP Support of OSP is essential to the development of new operational systems. As these systems become operational, mission control is exercised, based upon techniques developed by OSP. The use of ADP has substantially increased collection effectiveness and improved the economy of system operations. ADP is also used to optimize scheduling for timely coverage and economy. Total costs for 1969-1973 will be [REDACTED] man years.

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ADP Analysis of Scientific Intelligence (OSI) includes 19 separate projects relating to evaluation of hostile weapons systems and threats. Most of this ADP effort is associated with contracts for special studies. For 1969-1973 this project will cost [] man years.

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ADP Analysis of Foreign Missile and Space Activity (FMSAC) performs the information processing essential to description and analysis of [] and evaluation of technical characteristics of foreign missiles and space systems. ADP is the only economic means of performing the requisite [] For [] 1969-1973 costs will total [] man years.

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III. APPENDICES

APPENDIX A COMPUTER INVENTORY

APPENDIX B ADP BY PROGRAM CATEGORY

APPENDIX C COMPARISON WITH ADP AT THE
UNIVERSITY OF CALIFORNIA

COMPUTER INVENTORY

<u>Organization</u>			MID FY 68 <u>(12/31/67)</u>
<u>DD/I:</u>			
NPIC	3		UNIVAC 494 UNIVAC 490 IBM 1401
CRS	<u>2</u>		IBM 360/30 IBM 360/20
TOTAL			
<u>DD/S&T:</u>			
OCS	12		RCA 501 RCA 301 RCA 70/45 3 IBM 360/65 IBM 360/50 IBM 360/40 2 IBM 360/20 CDC 8092 ANDI
OEL	3	2	SDS 910 Burroughs D 82
OSA	6	6	U 1004
FMSAC	2		*IBM 360/50 CDC 1700
ORD	4		IBM 360/40 LINC 8 EAI 8800 III GS
TOTAL	<u>27</u>		

*Contractor's Facility

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<u>Organization</u>			<u>Mid FY 68</u> <u>(12/31/67)</u>
<u>DD/P:</u>			
RID	3	2	IBM 1410 IBM 360/40
FID	2		SDS 930 *SDS 930
TOTAL	5		
<u>DD/S:</u>			
OC	8	2	CDC G 15 CDC 8090 COL 8401 PDP 8 Honeywell DDP - 116 Beckman 210 DIHAG - II
TOTAL	8		
AGENCY TOTAL	45 (on hand and installed)		

*Contractor's facility

APPENDIX B

PROGRAM CATEGORY ANALYSIS

Column A of Figure 16 shows the ADP resource expenditure by office for Program categories and sub-categories. The resources in Column A are only those provided by the office indicated and do not include OCS or RID resources used by the office. Most of the categories represent a meaningful end item functional purpose. However, the Central ADP Services category simply represents the summation of all OCS expenditures, plus the hardware costs of RID, without any indication of the end purpose or result for which resources were expended or the projects and offices supported. In order to show the end purposes and uses made of these OCS and RID resources, they have been re-allocated to the program categories for which they were ultimately expended and the office which utilized them. These re-apportioned amounts are shown in Column B, and their totals are indicated by (). Column C then represents the total ADP expenditure per program category and subcategory.

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APPENDIX C

COMPARISON WITH ADP AT THE UNIVERSITY OF CALIFORNIA

One way of assessing and evaluating the reasonableness of projections of future Agency ADP development is to make comparisons with analogous institutions. Such comparisons are not precise and their validity is limited, but they can provide an approximate and general cross-check of trends, magnitudes and levels.

At the initiative of Mr. Charles J. Hitch, Vice President for Administration, a detailed study of ADP at the University of California was made in October 1966 by the Management Analysis Center, Inc. of Cambridge, Mass. (associated with Harvard University)..

The U. of C. has total annual expenditures of \$729 million for FY 1967. It operates 9 campuses located throughout the state, with 24 separate ADP facilities. Its computational activities span the full range from advanced scientific computing to information processing, to administrative applications, similar to those of the Agency. The record of past ADP development, magnitude of current activity, ADP problems, and future requirements are all quite similar to the Agency's.

The principal findings of the study on probable future requirements and growth of ADP at the U. of C. are shown in Figure 5 and compared with the findings of the Agency 5 Year ADP Plan. The U. of C. projected growth rate far exceeds the rate projected for the Agency and suggests that the Agency projections are not excessively high. To the contrary, the comparison suggests that the Agency projection may tend toward underestimating future ADP levels.

What is important in these estimates is not so much the projected numerical values of future costs of computation, as the fact that the costs and magnitude will undoubtedly be large and represent a rapid rate of growth.

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PROJECTED ADP DEVELOPMENT

CIA vs. University of California

	<u>CIA</u>	<u>U. of C.</u>
Average Annual \$ cost increase FY 1960-1968	<div style="border: 1px solid black; width: 100px; height: 250px;"></div>	50%
Projected Average Annual \$ cost increase FY 1969-1973		42%
Projected Average Annual increase in computer capacity FY 1969-1973		100%
Projected Average Annual \$ cost increase FY 1974-1980		14 - 20%
Forecast Annual ADP Expenditures by FY 1973		\$50M
Forecast Annual ADP Expenditures by FY 1980		\$100 - \$150M

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